

What is claimed is:

1. A receiving device comprising a receiving unit, a delay unit, an estimation unit, an equalizer/demodulator, and a replica unit, wherein:

said receiving unit receives a signal arriving through a transmission path, as a
5 reception signal;

said delay unit outputs a delay signal which is obtained by delaying the reception signal by a predetermined delay time;

said estimation unit estimates a transmission path characteristic;

said equalizer/demodulator compensates for the delay signal with the estimated
10 transmission path characteristic, demodulates a compensation result, and outputs a demodulation result as a transmission signal;

said replica unit compensates for the reception signal with the estimated transmission path characteristic, demodulates a compensation result, modulates a demodulation result, and outputs a modulation result as a replica signal;

15 said estimation unit estimates a transmission path characteristic by comparing the reception signal with the replica signal; and

the predetermined delay time is equal to or smaller than a time required for processes by said replica unit and said estimation unit.

2. The receiving device according to claim 1,

20 wherein the predetermined delay time is equal to a time required for processes by said replica unit and said estimation unit.

3. The receiving device according to claim 1,

wherein said estimation unit estimates a transmission path characteristic by
“comparing a signal obtained by delaying the reception signal by the predetermined delay
25 time with the replica signal” instead of by “comparing the reception signal with the replica signal”.

4. The receiving device according to claim 1,

wherein said estimation unit averages a time series of characteristics obtained as a result of the comparing by a predetermined time length, and regards the time series of characteristics obtained as a result of the averaging as the transmission path characteristic.

5. The receiving device according to claim 1, wherein:

5 said receiving device uses orthogonal frequency division multiplex; and
said delay unit, said estimation unit, said equalizer/demodulator, and said replica unit perform their processes for each carrier frequency of the orthogonal frequency division multiplex.

6. A receiving method comprising a receiving step, a delaying step, an
10 estimating step, an equalizing/demodulating step, and a replica step, wherein:

said receiving step receives a signal arriving through a transmission path as a reception signal;

said delaying step outputs a delay signal obtained by delaying the reception signal by a predetermined delay time;

15 said estimating step estimates a transmission path characteristic;

said equalizing/demodulating step compensates for the delay signal with the transmission path characteristic, demodulates a compensation result, and outputs a demodulation result as a transmission signal;

said replica step compensates for the reception signal with the transmission path
20 characteristic, demodulates a compensation result, modulates a demodulation result, and outputs a modulation result as a replica signal;

said estimation step estimates a transmission path characteristic by comparing the reception signal with the replica signal; and

the predetermined delay time is equal to or smaller than a time required for
25 processes in said replica step and said estimating step.

7. The receiving method according to claim 6,

wherein said predetermined delay time is equal to a time required for processes in

said replica step and said estimating step.

8. The receiving method according to claim 6,
wherein said estimating step estimates a transmission path characteristic by
“comparing a signal obtained by delaying the reception signal by the predetermined delay
5 time with the replica signal” instead of by “comparing the reception signal with the
replica signal”.

9. The receiving method according to claim 6,
wherein said estimating step averages a time series of characteristics obtained as a
result of the comparing by a predetermined time length, and regards the time series of
10 characteristics obtained as a result of the averaging as the transmission path characteristic.

10. The receiving method according to claim 6, wherein:
said receiving method uses orthogonal frequency division multiplex; and
said delaying step, said estimating step, said equalizing/demodulating step, and said
replica step perform processes for each carrier frequency of the orthogonal frequency
15 division multiplex.

11. A program product for controlling a computer (including a DSP (Digital
Signal Processor), a FPGA (Field Programmable Gate Array), or an ASIC (Application
Specific Integrated Circuit)) to function as the receiving device according to claim 1.

12. A program product for controlling a computer (including a DSP (Digital
20 Signal Processor), an FPGA (Field Programmable Gate Array), or an ASIC (Application
Specific Integrated Circuit)) to execute the receiving method according to claim 6.